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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,715	07/15/2003	Yoichi Momose	116220	7427
25944	7590	12/14/2004		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER DI GRAZIO, JEANNE A	
			ART UNIT 2871	PAPER NUMBER
DATE MAILED: 12/14/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/618,715

Applicant(s)

MOMOSE, YOICHI

Examiner

Jeanne A. Di Grazio

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/15/03
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Priority***

Priority to Japanese Patent Applications 2002-212765 (July 22, 2002) and 2003-114360 (April 18, 2003) is claimed.

### ***Claim Objections***

Claim 9 is objected to because of the following informalities:

As to claim 9, the preamble recites "[a] configuration of electronic equipment." Such language (a configuration) is confusing as it seems to suggest that various parts or elements of electronic equipment are somehow arranged relative to each other.

Appropriate correction is **required**.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 3, Applicant recites "the seal material being formed into the form of a closed frame without an opening which opens to an outer edge of the substrate."

If the frame is a closed frame then it impliedly has no opening. It cannot therefore have a lack of an opening which opens. Such contradictory language renders the claim indefinite.

For examination purposes, the Examiner interprets the claim to currently mean that the frame is completely closed without any type of injection port.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,337,729 B1 (to Mori) in view of Japanese Patent Application 08-106101 (to Koike et al.).

As to claim 1, Mori teaches and discloses with reference to Figure 1, a liquid crystal display device having a pair of substrates (3 and 4), spacers (18) located between the substrates (3 and 4), and a liquid crystal layer (17) held between the substrates (3 and 4), the liquid crystal layer (17) and spacers (18) being located in a region surrounded by a frame-shaped seal material (16). The seal material (16) surrounds the display region and the seal material (16) has no opening for an injection port.

Mori furthermore teaches and discloses a spacer distribution density ranging from 100 to 600 particles per square millimeter (Column 6, Lines 34-56). Such a range overlaps with Applicant's claimed range of 100 to 300 mm<sup>2</sup>. Mori teaches that if the spacer distribution density

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is smaller than 100 particles per square millimeter, liquid crystal layer thickness cannot be made uniform (Id.). Mori also teaches that if the density exceeds 600 particles per square millimeter, too much light would pass through the spacers thus resulting in display roughness (Id.).

Mori is therefore evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion and motivation to optimize a range of spacer distribution density to (1) ensure uniformity of the liquid crystal layer thickness and (2) to prevent display roughness.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to optimize a range of spacer distribution density to (1) ensure uniformity of the liquid crystal layer thickness and (2) to prevent display roughness both (1 and 2) as taught and disclosed by Mori.

Mori does not appear to explicitly specify an average particle size “D” of the spacers ranging from  $0.96d$  to  $1.02d$ , where a liquid crystal layer thickness in the region in which the spacers are disposed is represented by “d.”

Koike teaches and discloses a liquid crystal display panel and production method wherein spacers are a fraction of the liquid crystal layer thickness to ensure adhesion of substrates and to ensure re-alignment of the substrates without damage to the substrates [0009 and 0019].

Koike is evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion and motivation to include spacers a fraction of liquid crystal layer thickness to ensure adhesion of substrates and facile re-alignment of substrate without damage to the substrates.

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Therefore it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Mori in view of Koike to ensure adhesion of substrates and facile re-alignment of substrate without damage to the substrates.

As to claim 2, Mori teaches and discloses with reference to Figure 1, a liquid crystal display device having a pair of substrates (3 and 4), spacers (18) located between the substrates (3 and 4), and a liquid crystal layer (17) held between the substrates (3 and 4), the liquid crystal layer (17) and spacers (18) being located in a region surrounded by a frame-shaped seal material (16). The seal material (16) surrounds the display region and the seal material (16) has no opening for an injection port.

Mori furthermore teaches and discloses a spacer distribution density ranging from 100 to 600 particles per square millimeter (Column 6, Lines 34-56). Such a range overlaps with Applicant's claimed range of 150 to 300  $\text{mm}^2$ . Mori teaches that if the spacer distribution density is smaller than 100 particles per square millimeter, liquid crystal layer thickness cannot be made uniform (Id.). Mori also teaches that if the density exceeds 600 particles per square millimeter, too much light would pass through the spacers thus resulting in display roughness (Id.).

Mori is therefore evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion and motivation to optimize a range of spacer distribution density to (1) ensure uniformity of the liquid crystal layer thickness and (2) to prevent display roughness.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to optimize a range of spacer distribution density to (1) ensure uniformity of the liquid crystal layer thickness and (2) to prevent display roughness both (1 and 2) as taught and disclosed by Mori.

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Koike is evidence that ordinary workers in the field of liquid crystals would have found the reason, suggestion and motivation to include spacers a fraction of liquid crystal layer thickness to ensure adhesion of substrates and facile re-alignment of substrate without damage to the substrates.

Therefore it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Mori in view of Koike to ensure adhesion of substrates and facile re-alignment of substrate without damage to the substrates.

As to claim 3, as noted, the seal material (16) surrounds the display region and the seal material (16) has no opening for an injection port.

As to claim 4, Koike teaches that the spacers are coated with adhesives to adhere to the substrates (Patent Abstracts of Japan).

As to method claims 5-8, the method of manufacturing the liquid crystal display device would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made in view of the structures and devices as taught and disclosed by Mori in view of Koike.

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As to claim 9, both Mori and Koike teach and disclose that the device is applicable to electronic equipment (See, e.g., Mori Description of the Background Art).

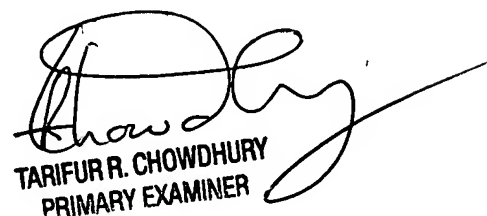
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio  
Patent Examiner  
Art Unit 2871

JDG



TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER